

CLAIMS**What is claimed is:**

1. A composition comprising, or produced from, a stabilizer, optionally a solvent and either (1) titanium or a titanium compound and a
5 complexing agent or (2) a titanium chelate; said complexing agent is an alkanolamine; said complexing agent optionally contains one or more hydroxyalkyl groups; and said stabilizer comprises a phosphorus-containing ester containing no free P-OH group, a zirconium compound having the formula of $Zr(OR)_4$, a zirconium chelate comprising or produced from $Zr(OR)_4$ and said
10 complexing agent, or combinations thereof in which each R individually has 1 to about 30 carbon atoms per radical.
2. A composition according to claim 1 wherein said composition comprises, or is produced from, said stabilizer, optionally said solvent, said titanium or said titanium compound, and said complexing agent, which is
15 ethanolamine, diethanolamine, triethanolamine, methyl, diethanolamine, dimethyl, ethanolamine, tri-isopropanolamine, or combinations of two or more thereof.
3. A composition according to claim 2 wherein said complexing agent is triethanolamine.
4. A composition according to claim 3 wherein said titanium
20 compound is tetra isopropyl titanate, tetra n-butyl titanate, or combinations thereof.
5. A composition according to claim 1 wherein said stabilizer is said phosphorus-containing ester.
6. A composition according to claim 1 wherein said stabilizer is tris-
25 phosphite ester, diphosphonite ester, or combinations thereof.
7. A composition according to claim 3 wherein said stabilizer is trimethyl phosphite; triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; trisdodecyl phosphite; trinonyldecyl phosphite; triphenylphosphite; phosphorous acid, [1,1'-biphenyl]-4,4'-diylbis-, tetrakis(2,4-bis(1,1-dimethylethyl)phenyl)ester;
30 (tris-(2,4-di-t-butyl) phosphite; triethylene glycol phosphite; tripropylene glycol phosphite; tributylene glycol phosphite; or combinations of two or more thereof.

8. A composition according to claim 4 wherein said stabilizer is triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; or combinations of two or more thereof

9. A composition according to claim 1 wherein said stabilizer is said
5 zirconium compound.

10. A composition according to claim 2 wherein said stabilizer is said zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

10 11. A composition according to claim 3 wherein said stabilizer is said zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

12. A composition according to claim 4 wherein said stabilizer is said
15 zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof

13. A composition according to claim 8 further comprising tin or a tin compound.

20 14. A composition according to claim 12 further comprising tin or a tin compound.

15. A composition according to claim 1 wherein said composition comprises, or is produced from, said stabilizer, optionally said solvent, and said titanium chelate.

25 16. A composition according to claim 15 wherein said titanium chelate is produced from a tetraalkyl titanate and either ethanolamine, diethanolamine, triethanolamine, methyl, diethanolamine, dimethyl, ethanolamine, tri-isopropanolamine, or combinations of two or more thereof.

30 17. A composition according to claim 16 wherein said titanium compound is tetra isopropyl titanate, tetra n-butyl titanate, or combinations thereof.

18. A composition according to claim 16 wherein said titanium chelate is TYZOR[®] TE (bis(triethanolamino) titanate in isopropanol).

19. A composition according to claim 16 wherein said stabilizer is said phosphorus-containing ester, which is tris-phosphite ester, diphosphonite ester, or combinations thereof.

20. A composition according to claim 17 wherein said stabilizer is said phosphorus-containing ester, which is trimethyl phosphite; triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; trisdodecyl phosphite; trinonyldecyl phosphite; triphenylphosphite; phosphorous acid, [1,1'-biphenyl]-4,4'-diylbis-, tetrakis(2,4-bis(1,1-dimethylethyl)phenyl)ester; (tris-(2,4-di-t-butyl) phosphite; triethylene glycol phosphite; tripropylene glycol phosphite; tributylene glycol phosphite; or combinations of two or more thereof.

21. A composition according to claim 18 wherein said stabilizer is said phosphorus-containing ester, which is triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; or combinations of two or more thereof

22. A composition according to claim 15 wherein said stabilizer is said zirconium compound.

23. A composition according to claim 17 wherein said stabilizer is said zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

24. A composition according to claim 18 wherein said stabilizer is said zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

25. A process comprising contacting, in the presence of a catalyst, a carbonyl compound with an alcohol wherein said catalyst comprises, or is produced from, titanium or a titanium compound, a complexing agent, a stabilizer, and optionally a solvent; said complexing agent is an alkanolamine; and said stabilizer is a phosphorus-containing ester containing no free P-OH group, a zirconium compound having the formula of Zr(OR)₄, a zirconium chelate

comprising or produced from $Zr(OR)_4$ and said complexing agent, or combinations thereof; each R individually has 1 to about 30 carbon atoms per radical.

26. A process according to claim 25 wherein said complexing agent is
5 an alkanolamine, which optionally contains one or more hydroxyalkyl groups.

27. A process according to claim 26 wherein said complexing agent is ethanolamine, diethanolamine, triethanolamine, methyl, diethanolamine, dimethyl, ethanolamine, tri-isopropanolamine, and combinations of two or more thereof.

28. A process according to claim 27 wherein said complexing agent is
10 triethanolamine.

29. A process according to claim 28 wherein said titanium compound is tetra isopropyl titanate, tetra n-butyl titanate, or combinations thereof.

30. A process according to claim 25 wherein said stabilizer is said
15 phosphorus-containing ester, which is tris-phosphite ester, diphosphonite ester, or combinations thereof.

31. A process according to claim 28 wherein said stabilizer is said phosphorus-containing ester, which is trimethyl phosphite; triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; trisdodecyl phosphite; trinonyldecyl phosphite; triphenylphosphite; phosphorous acid, [1,1'-biphenyl]-4,4'-diylbis-
20 ,tetrakis(2,4-bis(1,1-dimethylethyl)phenyl)ester; (tris-(2,4-di-t-butyl) phosphite; triethylene glycol phosphite; tripropylene glycol phosphite; tributylene glycol phosphite; or combinations of two or more thereof.

32. A process according to claim 29 wherein said stabilizer is said phosphorus-containing ester, which is triethyl phosphite; tributyl phosphite; tri-
25 isopropylphosphite; or combinations of two or more thereof

33. A process according to claim 32 wherein said carbonyl compound is terephthalic acid, its ester, its salt, or combinations thereof and said alcohol is butylene glycol or ethylene glycol.

34. A process according to claim 25 wherein said stabilizer is said
30 zirconium compound.

35. A process according to claim 27 wherein said stabilizer is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

5 36. A process according to claim 29 wherein said stabilizer is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

10 37. A process according to claim 36 wherein said carbonyl compound is terephthalic acid, its ester, its salt, or combinations thereof and said alcohol is butylene glycol or ethylene glycol.

15 38. A process comprising contacting, in the presence of a catalyst, a carbonyl compound with an alcohol to produce a product comprising an oligomer wherein said catalyst comprises, or is produced from, a titanium chelate, a color stabilizer, and optionally a solvent; said stabilizer is a phosphorus-containing ester containing no free P-OH group, a zirconium chelate comprising or produced from $Zr(OR)_4$ and a complexing agent in which each R individually has 1 to about 30 carbon atoms per radical; and said oligomer comprises repeat units derived from said carbonyl compound and said alcohol.

20 39. A process according to claim 38 wherein said titanium chelate is TYZOR[®] TE (bis(triethanolamino) titanate in isopropanol).

40. A process according to claim 38 wherein said stabilizer is said phosphorus-containing ester, which is tris-phosphite ester, diphosphonite ester, or combinations thereof.

25 41. A process according to claim 39 wherein said stabilizer is said phosphorus-containing ester, which is trimethyl phosphite; triethyl phosphite; tributyl phosphite; tri-isopropylphosphite; trisdodecyl phosphite; trinonyldecyl phosphite; triphenylphosphite; phosphorous acid, [1,1'-biphenyl]-4,4'-diylbis-, tetrakis(2,4-bis(1,1-dimethylethyl)phenyl)ester; (tris-(2,4-di-t-butyl) phosphite; 30 triethylene glycol phosphite; tripropylene glycol phosphite; tributylene glycol phosphite; or combinations of two or more thereof.

42. A process according to claim 39 wherein said stabilizer is said phosphorus-containing ester, which is triethyl phosphite; tributyl phosphite; triisopropylphosphite; or combinations of two or more thereof

43. A process according to claim 42 wherein said carbonyl compound
5 is terephthalic acid, its ester, its salt, or combinations thereof and said alcohol is butylene glycol or ethylene glycol.

44. A process according to claim 38 wherein said stabilizer is said zirconium compound.

45. A process according to claim 39 wherein said stabilizer is said
10 zirconium compound, which is TYZOR[®] NPZ (tetrapropyl zirconate), TYZOR[®] NBZ (tetrabutyl zirconate), TYZOR[®] TEAZ (tetrakis(triethanolamino) zirconate), or combinations of two or more thereof.

46. A process according to claim 45 wherein said carbonyl compound
15 is terephthalic acid, its ester, its salt, or combinations thereof and said alcohol is butylene glycol or ethylene glycol.